WHAT WE CLAIM IS:

1. An image-forming optical system having a positive refracting power as a whole for forming an object image, said image-forming optical system comprising:

a prism member formed from a medium having a refractive index (n) larger than 1 (n>1), said prism member having:

a first entrance surface through which a light beam from an object enters said prism member;

a first reflecting surface, a second reflecting surface, a third reflecting surface and a fourth reflecting surface, which reflect the light beam in said prism member; and

a first exit surface through which the light beam exits from said prism member;

wherein an optical path connecting said second reflecting surface and said third reflecting surface intersects an optical path connecting said first entrance surface and said first reflecting surface, and the optical path connecting said second reflecting surface and said third reflecting surface intersects an optical path connecting said fourth reflecting surface and said first exit surface,

wherein at least either one of said first reflecting surface and said second reflecting surface has a curved surface configuration that gives a power to a light beam, said curved surface configuration being a rotationally asymmetric surface configuration that corrects aberrations

due to decentration, and at least either one of said third reflecting surface and said fourth reflecting surface has a curved surface configuration that gives a power to a light beam, said curved surface configuration being a rotationally asymmetric surface configuration that corrects aberrations due to decentration, and

wherein an intermediate image plane is formed between said first reflecting surface and said fourth reflecting surface.

2. An image-forming optical system according to claim 1, wherein said prism member is a single cemented or integral prism having the first entrance surface, the first reflecting surface, the second reflecting surface, the third reflecting surface, the fourth reflecting surface, and the first exit surface.

3. An image-forming optical system according to claim 1, wherein said prism member comprises two prisms separate from each other in an optical path between said second reflecting surface and said third reflecting surface.

4. An image-forming optical system according to claim 1, wherein said prism member rotates a light beam along a triangular path by said first entrance surface, said first reflecting surface and said second reflecting surface, thereby forming first intersecting optical paths, and also rotates a light beam along a triangular path by said third reflecting surface, said fourth reflecting surface and said first exit surface, thereby forming

second intersecting optical paths, and

wherein a direction of rotation of the light beam traveling along the triangular path to form said first intersecting optical paths is identical to a direction of rotation of the light beam traveling along the triangular path to form said second intersecting optical paths.

5. An image-forming optical system according to claim 1, wherein said prism member rotates a light beam along a triangular path by said first entrance surface, said first reflecting surface and said second reflecting surface, thereby forming first intersecting optical paths, and also rotates a light beam along a triangular path by said third reflecting surface, said fourth reflecting surface and said first exit surface, thereby forming second intersecting optical paths, and

wherein a direction of rotation of the light beam traveling along the triangular path to form said first intersecting optical paths is opposite to a direction of rotation of the light beam traveling along the triangular path to form said second intersecting optical paths.

6. An image-forming optical system according to claim 1, wherein both said first reflecting surface and said second reflecting surface have a curved surface configuration that gives a power to a light beam, said curved surface configuration being a rotationally asymmetric surface configuration that corrects aberrations due to decentration.

7. An image-forming optical system according to any

one of claims 1 to 6, wherein both said third reflecting surface and said fourth reflecting surface have a curved surface configuration that gives a power to a light beam, said curved surface configuration being a rotationally asymmetric surface configuration that corrects aberrations due to decentration.

8. An image-forming optical system according to any one of claims 1 to 6, wherein said first entrance surface has a curved surface configuration that gives a power to a light beam, said curved surface configuration being a rotationally asymmetric surface configuration that corrects aberrations due to decentration.

9. An image-forming optical system according to any one of claims 1 to 6, wherein said first exit surface has a curved surface configuration that gives a power to a light beam, said curved surface configuration being a rotationally asymmetric surface configuration that corrects aberrations due to decentration.

10. An image-forming optical system according to any one of claims 1 to 6, wherein the rotationally asymmetric surface configuration of said prism member is a plane-symmetry free-form surface having only one plane of symmetry.

11. An image-forming optical system according to claim 10, wherein the one and only plane of symmetry of the plane-symmetry free-form surface of said prism member is coincident with a plane formed by an axial ~~principal~~ ray traveling along said first intersecting optical paths.

12. An image-forming optical system according to claim 11, wherein the one and only plane of symmetry of the plane-symmetry free-form surface of said prism member is coincident with a plane formed by an axial principal ray traveling along said second intersecting optical paths.

13. An image-forming optical system according to any one of claims 1 to 12, wherein said intermediate image plane is formed between said second reflecting surface and said third reflecting surface.

14. An image-forming optical system according to claim 13, wherein optical surfaces of said prism member that are closer to an object side than said intermediate image plane are arranged to correct decentration aberrations as a whole and optical surfaces of said prism member that are closer to an image-formation plane side than said intermediate image plane are arranged to correct decentration aberrations as a whole so that said intermediate image plane is formed in an approximately planar shape.

15. An image-forming optical system according to any one of claims 1 to 6, wherein, when powers in X- and Y-directions of an entire optical system are denoted by Px and Py, respectively, and powers in the X-direction of the first reflecting surface, the second reflecting surface, the third reflecting surface and the fourth reflecting surface are denoted by Px1-1, Px1-2, Px2-1 and Px2-2, respectively, and further powers in the Y-direction of the first reflecting surface, the second reflecting surface,

the third reflecting surface and the fourth reflecting surface are denoted by Py1-1, Py1-2, Py2-1 and Py2-2, respectively, the following condition is satisfied:

$$0.4<Px1\text{-}1/Px<1.1 \quad \cdots(1)$$

16. An image-forming optical system according to any one of claims 1 to 6, wherein, when powers in X- and Y-directions of an entire optical system are denoted by Px and Py, respectively, and powers in the X-direction of the first reflecting surface, the second reflecting surface, the third reflecting surface and the fourth reflecting surface are denoted by Px1-1, Px1-2, Px2-1 and Px2-2, respectively, and further powers in the Y-direction of the first reflecting surface, the second reflecting surface, the third reflecting surface and the fourth reflecting surface are denoted by Py1-1, Py1-2, Py2-1 and Py2-2, respectively, the following condition is satisfied:

$$0.1<Px1\text{-}2/Px<0.6 \quad \cdots(2)$$

17. An image-forming optical system according to any one of claims 1 to 6, wherein, when powers in X- and Y-directions of an entire optical system are denoted by Px and Py, respectively, and powers in the X-direction of the first reflecting surface, the second reflecting surface, the third reflecting surface and the fourth reflecting surface are denoted by Px1-1, Px1-2, Px2-1 and Px2-2, respectively, and further powers in the Y-direction of the first reflecting surface, the second reflecting surface, the third reflecting surface and the fourth reflecting surface are denoted by Py1-1, Py1-2, Py2-1 and Py2-2,

respectively, the following condition is satisfied:

$$0.2<Px2\text{-}1/Px<1 \quad \cdots(3)$$

18. An image-forming optical system according to any one of claims 1 to 6, wherein, when powers in X- and Y-directions of an entire optical system are denoted by Px and Py, respectively, and powers in the X-direction of the first reflecting surface, the second reflecting surface, the third reflecting surface and the fourth reflecting surface are denoted by Px1-1, Px1-2, Px2-1 and Px2-2, respectively, and further powers in the Y-direction of the first reflecting surface, the second reflecting surface, the third reflecting surface and the fourth reflecting surface are denoted by Py1-1, Py1-2, Py2-1 and Py2-2, respectively, the following condition is satisfied:

$$0.5<Px2\text{-}1/Py2\text{-}1<2.0 \quad \cdots(4)$$

19. A finder optical system comprising:

said image-forming optical system according to any one of claims 1 to 6, said image-forming optical system being provided as a finder objective optical system;

an image-erecting optical system for erecting an object image formed by said finder objective optical system; and

an ocular optical system.

20. A camera apparatus comprising:

said finder optical system according to claim 19; and

an objective optical system for photography provided in parallel to said finder optical system.

21. An image pickup optical system comprising:

said image-forming optical system according to any one of claims 1 to 6; and

an image pickup device placed in an image plane formed by said image-forming optical system.

22. A camera apparatus comprising:

said image-forming optical system according to any one of claims 1 to 6, said image-forming optical system being provided as an objective optical system for photography; and

a finder optical system placed in one of an optical path separate from an optical path of said objective optical system for photography and an optical path split from the optical path of said objective optical system for photography.

23. An electronic camera apparatus comprising:

said image-forming optical system according to any one of claims 1 to 6;

an image pickup device placed in an image plane formed by said image-forming optical system;

a recording medium for recording image information received by said image pickup device; and

an image display device that receives image information from one of said recording medium and said image pickup device to form an image for observation.

24. An endoscope system comprising:

an observation system having said image-forming optical system according to any one of claims 1 to 6 and

an image transmitting member for transmitting an image formed by said image-forming optical system along a longitudinal axis; and

an illumination system having an illuminating light source and an illuminating light transmitting member for transmitting illuminating light from said illuminating light source along said longitudinal axis.